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| 10/657,806 | 09/08/2003 | Hisakazu Okajima | 815_011 | 1123 |
| 25191 | 7590 | 08/17/2005 | EXAMINER | |
| Burr & Brown PO BOX 7068 SYRACUSE, NY 13261-7068 | | | PAIK, SANG YEOP | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3742 | |

DATE MAILED: 08/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/657,806

Applicant(s)

OKAJIMA, HISAKAZU

Examiner

Sang Y. Paik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-21 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☒ Claim(s) 4 is/are allowed.
6) ☒ Claim(s) 1-3, 5-9 and 11-21 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 15, 16, 17, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kano et al (US 6,242,719).

Kano shows a heater having a ceramic plate made of aluminum nitride with a resistant heater element formed in the ceramic plate, the heater element forming a continuous wiring pattern with a plurality of flexures wherein the area between immediately radially adjacent flexure expands or varies between the flexures as the flexures circumvent along the terminal 5. Also, the heating element having the wiring pattern further includes the flexures having a swollen part in an asymptotic direction as the wiring pattern passes the terminals (see Figure 1(a) where the swollen portions are the portions that are protruding toward the terminal).

3. Claims 2, 5 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Hurko (US 3,067,315).

Hurko shows a heater having a ceramic plate with a resistant heater element formed therein with the heater element having a continuous wiring pattern with a plurality of radially adjacent folding parts where in the wiring pattern has a substantially constant distance before the

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folding parts and an increasing distance between the folding parts that is greater than the first distance.

4. Claim 21 is rejected under 35 U.S.C. 102(e) as being anticipated by Fure et al (US 6,753,507).

Fure shows a ceramic heater with a hole formed therein, a resistance heater element having a continuous wiring pattern including a plurality of flexures connecting a plurality of radially sequentially concentric arc portions, a plurality of curved avoidance portions having a radius of curvature that sequentially increases as the respective distance between the curved portion and the hole (64) increases (see Figure 3).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 3, 5, 8, 9, 11, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fure et al (US 6,753,507) in view of Mizuno et al (US 5,766,363).

Fure shows the heater structure claimed including a ceramic plate made of aluminum nitride ceramics, a heater element having a continuous wiring pattern having a plurality of concentrically disposed elements further having a plurality of flexures with a plurality of folding parts. However, Fure does not show the wiring pattern portion proximate the folding parts is greater than the claimed first distance.

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Mizuno shows a heating pattern including a plurality of flexures with a folding part where the distance between the radially adjacent wirings between the folding parts gradually becomes wider in the second region than in the first region where the distance between the wiring patterns remains substantially constant. Mizuno further shows that the folding parts include a substantially linear connecting part between its corners.

In view of Mizuno, it would have been obvious to one of ordinary skill in the art to adapt Fure with the claimed second distance between the radially adjacent wirings in the second region to further provide a uniform heating distribution along the heating surface.

7. Claims 6, 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fure in view of Mizuno as applied to claims 2, 3, 5, 8, 9, 11, 13 and 14 above, and further in view of Yoshida et al (US 6,080,970).

Fure in view of Mizuno shows the heater structure claimed except providing the terminals in the center of the plate.

Yoshida shows a ceramic heater where the terminals of the heating element in the center of the plate, and Yoshida further shows that the heater element embedded in the ceramic plate. In view of Yoshida, it would have been obvious to one of ordinary skill in the art to adapt Fure, as modified by Mizuno, with the terminals provided in the center of the plate as an alternative arrangement to more conveniently provide the electrical terminal connections, and further adapt with embedded heater element in the aluminum nitride ceramic plate that can also provide a uniform heating distribution that can withstand a high temperature and corrosion.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kano et al (US 6,242,719) in view of Yoshida et al (US 6,080,970).

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Kano shows the heater structure claimed except the heater element being embedded in the ceramic plate.

Yoshida shows a ceramic heater with a heating element embedded therein. In view of Yoshida, it would have been obvious to one of ordinary skill in the art to adapt Kano with the heating element embedded in the ceramic plate as an alternative arrangement that can also provide a good uniform heat distribution as well as to further protect the heating element from corrosion.

Allowable Subject Matter

9. Claim 4 is allowed.

Response to Arguments

10. Applicant's arguments filed 5/27/05 have been fully considered but they are not persuasive.

The applicant argues Kano does not show the gap or distance between any of the immediately adjacent flexures is anything other than substantially constant. This argument is not deemed persuasive. In Figure 1(a) of Kano, the end portions of the radially adjacent flexure portions circumvent the round shape of the terminal portion, and as the flexure curves in the asymptotic direction to accommodate the round shape of the terminal portion, the area between the immediately adjacent flexures varies to expand.

Applicant argues that Hurko does not show the immediately radially folding parts. The folding parts are clearly as illustrated in the drawing figure of Hurko where the end portion of the wiring pattern shows the immediate folding parts whose distance therebetween increases compared to the distance between the wiring pattern before the folding parts.

With respect to Fure, the applicant argues there is no area between the flexures vary, and it further does not show the curved portions that avoid the hole where the radius of curvature of the curve portions increase as the distance between the curved portions and the hole increase. It is noted that the varying area between flexure is rejected under the secondary Mizuno reference, and with respect to the increasing curvature radius, it is clearly shown in Figure 3 of Fure that the subsequent curvature of the heating wire increases. It is also noted that the subsequent wiring pattern takes the form of the arcs that clearly shows increasing curvature radius than the immediate curved portions near the hole (64).

With respect to Mizuno, the drawing Figure 2 clearly shows the plurality of the flexures which connect the concentrically disposed heating element lines and it further shows the expanded curves at the inner edge of the flexure portions that meets the claimed folding parts having the increasing distance at the region proximate to the folding parts from the other adjacent wiring pattern. Since the heating element of Mizuno is design to provide a stable heating, it would have been obvious to modify the heating pattern of Kano as that of Mizuno to also provide a stable heating that would provide a uniform heating across the heating surface.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y. Paik whose telephone number is 571-272-4783. The examiner can normally be reached on M-F (9:00-4:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Paik

Sang Y Paik
Primary Examiner
Art Unit 3742

syp